

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q81063

WATANABE, Hideo, et al.

Appln. No.: 10/823,799

Group Art Unit: 3711

Confirmation No.: 4692

Examiner: Raeann Gordon

Filed: April 14, 2004

For: GOLF BALL

SUBMISSION OF EXECUTED DECLARATION UNDER 37 C.F.R. §1.132

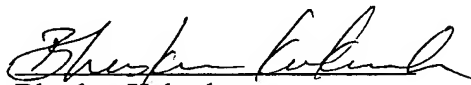
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith is a copy of an executed Declaration Under 37 C.F.R. §1.132 signed
by Mr. Hideo Watanabe.

Respectfully submitted,

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WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: June 24, 2005



IN THE U.S. PATENT AND TRADEMARK OFFICE

APPLICANT : WATANABE ET AL.

SERIAL NO.: 10/823,799

FILED: April 14, 2004

FOR: GROUP: 3711

EXAMINER: Raeann Gorden

DECLARATION

Honorable Commissioner of Patents and Trademarks Washington, D.C. 20231

Sir,

I, Hideo Watanabe, resident of c/o Bridgestone Sports Co., Ltd., M&D center Chichibu, 20, Ohnohara, Chichibu-shi, Saitama-ken, Japan do hereby declare that:

1. I was graduated from Master Course of Mechanical Engineering, Faculty of Science and Technology of Tokyo University of Science, Japan in March 1990. From April 1990 to 1993, I was employed by Bridgestone Corporation, and in April 1993, I was transferred from Bridgestone Corporation to Bridgestone Sports Co., Ltd., the assignee of the above-identified application. I have been engaged in research and development relating to sporting goods such as golf balls in the laboratory of the Company.

2. I am one of the named inventors of the above-identified

application and I am familiar with the subject matter disclosed in said application.

3. In order to show the feature of the present invention, I conducted the following experiment.

[Experiment]

The object of the experiment is to measure the melt flow rate (MFR) of a cover resin composition consisting of Hi-milane 1605 and Hi-milane 1706 (weight ratio 50/50) disclosed in Examples No.1 to 5 of USP 5,645,496 (Endo et al.).

Melt flow rate of the cover resin composition was measured in accordance with JIS K7210 (1999), that is, under conditions: test temperature 190°C and test load 21.2 N (2.16 kgf).

As a result, the melt flow rate of the cover resin composition of Examples No.1 to 5 (Hi-milane 1605/1706 =50/50) and was 1.7.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated this 13th day of May, 2005

Hideo watanabe



US006592471B1

(12) **United States Patent**
Watanabe et al.

(10) Patent No.: **US 6,592,471 B1**
(45) Date of Patent: **Jul. 15, 2003**

(54) **MULTI-PIECE SOLID GOLF BALL**

(75) Inventors: Hideo Watanabe, Chichibu (JP);
Yasumasa Shimizu, Chichibu (JP);
Akira Kawata, Chichibu (JP)

(73) Assignee: Bridgestone Sports Co., Ltd., Tokyo
(JP)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 30 days.

(21) Appl. No.: 09/657,940

(22) Filed: Sep. 8, 2000

(30) Foreign Application Priority Data

Sep. 14, 1999 (JP) 11-259851

(51) Int. Cl.⁷ A63B 37/04; A63B 37/06;
A63B 37/12; A63B 37/14; A63B 37/00

(52) U.S. Cl. 473/377; 473/371; 473/378;
473/351

(58) Field of Search 473/371, 372,
473/373, 374, 376, 377, 378

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(57) **ABSTRACT**

In a golf ball comprising a solid core, a mantle, and a cover, the mantle is formed of a thermoplastic elastomer having a Shore D hardness of 30–52, the cover is formed of a thermoplastic resin loaded with a particulate inorganic filler, the solid core has a surface JIS C hardness 10–22 units greater than a center JIS C hardness, and the golf ball has an inertia moment of 82.5–85.5 kg·cm². The ball is improved in durability and feel when hit with clubs of different types.

14 Claims, 1 Drawing Sheet

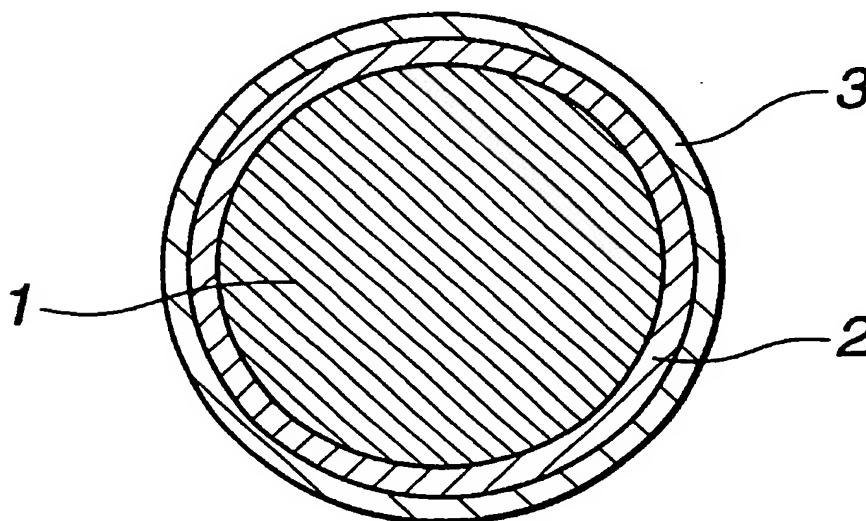


TABLE 2

Core composition (pbw)	Comparative Example									
	1	2	3	4	5	6	7	8	9	10
Polybutadiene	100	100	100	100	100	100	100	100	100	100
Zinc diacrylate	23.5	22	31.5	38	36	32.5	21.5	31.5	28	21.5
Dicumyl peroxide	1	1	1	1	1	1	1	1	1	1
Antioxidant	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Barium sulfate	23.6	22.7	2.4	1.17	10.41	24.82	19.72	9.97	16.08	13.2
Zinc oxide	5	5	5	5	5	5	5	5	5	5
Zinc salt of pentachlorothiophenol	1	0.1	1	0.1	1	1	0.1	1	1	0.2
Primary vulcanizing conditions										
Temperature (° C.)	155	155	145	160	155	155	155	155	155	155
Time (min)	20	15	30	15	20	20	15	20	20	15
Secondary vulcanizing conditions										
Temperature (° C.)	170									
Time (min)	10									
Core hardness (JIS C)										
H1: Surface hardness	75	72	73	90	92	82	75	81	76	74
H2: Center hardness	60	60	70	70	70	67	55	65	64	54
H1 - H2	15	12	3	20	22	15	20	16	12	20

TABLE 3

c (Table 3)

Mantle/Cover composition (pbw)	a	b	c	d	e	f	g	h	i	j
Hytrel 3078	100									
Hytrel 4047		100								
Hytrel 4767			100							
Toughtec M1943				100						
• Himilan 1706					50					
• Himilan 1557						50		50		
• Himilan 1650							60			40
• Himilan 1605					50					
• Himilan 1601						50		50		
Surlyn 8120							40			60
Barium Sulfate 300								27	13.5	
Titanium dioxide					5.6	5.6	5.6	5.6	5.6	5.6
• Resin hardness (Shore D)	30	40	47	25	63	60	56	62	61	53
Specific gravity	1.08	1.12	1.16	0.90	0.99	0.96	0.98	1.17	1.07	0.99

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TABLE 4

Mantle composition (pbw)	k	50
Polybutadiene	100	
Zinc diacrylate	34	
Dicumyl peroxide	1	55
Antioxidant	0.1	
Barium sulfate	22.12	
Zinc oxide	5	
Zinc salt of pentachlorothiophenol	1	60
Vulcanizing conditions	Temperature (° C.)	155
	Time (min)	20
Surface hardness (Shore D)		55
Specific gravity	1.17	65